

=> d his

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(FILE 'HOME' ENTERED AT 08:50:13 ON 07 DEC 2005)
FILE 'CA' ENTERED AT 08:50:21 ON 07 DEC 2005
L1  33753 S (MULTICHANNEL OR MULTITUBE OR (MULTI OR MULTIPLE OR PLURAL? OR
      PARALLEL) (2A) (TUBE OR CHANNEL OR TUBULAR) OR 2 OR 3 OR 4 OR 5 OR 6
      OR 7 OR 8 OR 9 OR 10 OR 11 OR 12 OR 13 OR 14 OR 15 OR 16 OR 17 OR
      18 OR 19 OR 20 OR 21 OR 22 OR 23 OR 24 OR 25) (3A) (REACTOR OR
      MICROREACTOR OR MINIREACTOR)
L2   8011 S (TWO OR THREE OR FOUR OR FIVE OR SIX OR SEVEN OR EIGHT OR NINE OR
      TEN OR ELEVEN OR TWELVE OR THIRTEEN OR FOURTEEN OR FIFTEEN OR
      SIXTEEN OR SEVENTEEN OR EIGHTEEN OR NINETEEN OR TWENTY) (3A) (REACTOR
      OR MICROREACTOR OR MINIREACTOR)
L3   214 S ARRAY (3A) (REACTOR OR MICROREACTOR OR MINIREACTOR)
L4   9796 S L1-3 AND CATALY?
L5   5076 S L1/TI, IT, ST
L6   3705 S L2/TI, IT, ST
L7   112 S L3/TI, IT, ST
L8  1008 S L4 AND L5-7
L9   137 S L8 AND (SCREEN? OR DISCOVER? OR EVALUAT? OR IDENTIF? OR ANALY? OR
      STUDY? OR STUDIE# OR CHARACTERI? OR TEST? OR ASSESS? OR EXAMIN? OR
      DIFFERENTIA? OR COMPAR? OR OPTIM?) (3A) CATALY?
L10  10 S L8 AND (SCREEN? OR DISCOVER? OR EVALUAT? OR IDENTIF? OR ANALY? OR
      STUDY? OR STUDIE# OR CHARACTERI? OR TEST? OR ASSESS? OR EXAMIN? OR
      DIFFERENTIA? OR COMPAR? OR OPTIM?) (3A) (METHOD OR PROCESS) (4A)
      (DESIGN? OR CONTROL? OR CONDITION? OR PARAMETER? OR VARIABLE)
L11  0 S L8 AND (CAPILLARY OR PASSIVE OR ORIFICE) (3A) (FLOW? (2A) (CONTROL? OR
      RESTRICT?))
L12  1 S L4 AND (CAPILLARY OR PASSIVE OR ORIFICE) (3A) (FLOW? (2A) (CONTROL? OR
      RESTRICT?))
L13  8788 S L4 NOT L8
L14  760 S L13 AND (SCREEN? OR DISCOVER? OR EVALUAT? OR IDENTIF? OR ANALY? OR
      STUDY? OR STUDIE# OR CHARACTERI? OR TEST? OR ASSESS? OR EXAMIN? OR
      DIFFERENTIA? OR COMPAR? OR OPTIM?) (3A) CATALY?
L15  51 S L13 AND (SCREEN? OR DISCOVER? OR EVALUAT? OR IDENTIF? OR ANALY? OR
      STUDY? OR STUDIE# OR CHARACTERI? OR TEST? OR ASSESS? OR EXAMIN? OR
      DIFFERENTIA? OR COMPAR? OR OPTIM?) (3A) (METHOD OR PROCESS) (4A)
      (DESIGN? OR CONTROL? OR CONDITION? OR PARAMETER? OR VARIABLE)
L16  214 S L14 AND FLOW?
      E KAPTEIJN F/AU
L17  14 S E3-4 AND 1993/PY
L18  1 S L17 AND IND/SO
L19  417 S L9-12, L15-17
L20  264 S L19 NOT PY>2000
L21  39 S L19 AND PATENT/DT AND PY<2004
L22  281 S L20-21
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=> d bib, ab l22 1-281

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L22  ANSWER 175 OF 281  CA  COPYRIGHT 2005 ACS on STN
AN   104:188816  CA
TI   The design and construction of a multichannel microreactor for catalyst
      evaluation
AU   Creer, J. Graham; Jackson, Peter; Pandey, Gordon; Percival, Gordon G.;
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Seddon, Duncan  
 CS Melbourne Res. Lab., BHP Co. Ltd., Mulgrave, 3170, Australia  
 SO Applied Catalysis (1986), 22(1), 85-95  
 AB The design and construction of a **multichannel microreactor** (3 stainless-steel tubes 200-mm long and 6-mm in diam. in a block) for **catalyst evaluation** is described. Problems assocd. with reproducibility of such systems are discussed and methods of overcoming them proposed. Microreactors offer sufficient mass and heat transfer so that the choice of **catalyst** form, whether tablet, extrusion or crushed chip, is of secondary importance to the chem. being obsd.

L22 ANSWER 176 OF 281 CA COPYRIGHT 2005 ACS on STN  
 AN 104:156633 CA  
 TI Experimental system for heterogeneous **catalysis** research  
 AU Korf, C. J.; Espinoza, R. L.  
 CS S. Afr.  
 SO CSIR Report CENG (1986), 584, 31 pp.  
 AB The exptl. system for heterogeneous **catalysis** has the following features: (1) modular design of the feed prepn., feed control, reactors, and data anal. stations, thus allowing great flexibility in the expts.; (2) the capability of prepg. gas mixts. to be used as feeds, thus requiring fewer **flow** meters; (3) the capability of using gas and/or liq. feeds; (4) **3 microreactors** with sampling points at each outlet, allowing the compn. of intermediate products to be detd. when the reactors are used in series; (5) the capability of measuring temp. gradients in the **microreactors**; and (6) precautions against temp. overshoot and temp. runaway.

L22 ANSWER 203 OF 281 CA COPYRIGHT 2005 ACS on STN  
 AN 97:61592 CA  
 TI **Four-reactor** apparatus for chromatographic **studies** of **catalysts** and sorbents  
 AU Steininger, Mieczyslaw; Liszka, Marian; Rutkowski, Marian; Slomka, Bogdan  
 CS Inst. Chem. Technol. Pet. Coal, Tech. Univ. Wroclaw, Wroclaw, 50-344, Pol.  
 SO Journal of Chromatography (1982), 243(2), 279-84  
 AB A general purpose, **4-microreactor** app. was constructed, which includes 3 sections (A, B, and C) of 6-way valves, 4 in each section. Each section of valves plays a sep. role: the valves in section A serve to introduce reactants into an individual reactor or a gas chromatograph by the pulse technique; those in section B link the **4 microreactors** to the app.; those in section C make possible the introduction of reaction mixts. into the chromatograph when the reactor is in operation being fed continuously with substrates.

L22 ANSWER 209 OF 281 CA COPYRIGHT 2005 ACS on STN  
 AN 96:9039 CA  
 TI Evaluation of the stability of **catalysts** for the hydrocracking of vacuum distillates  
 AU Kurganov, V. M.; Shtein, V. I.; Alikperova, M. S.; Akimov, Sh. K.  
 CS USSR  
 SO Sbornik Nauchnykh Trudov - Vsesoyuznyi Nauchno-Issledovatel'skii

Institut po Pererabotke Nefti (1980), 38, 53-6

LA Russian

AB The following conditions were found suitable for the rapid **evaluation** of hydrocracking **catalysts** in lab. **flow reactors**: 440°, 2 h<sup>-1</sup> oil feed space velocity, and 1500 H-feed vol. ratio. **Two** lab. **reactors** of 200 mL capacity, 1 filled with a ground (particle size 0.6-1 mm) **catalyst** under **test** and the other with a std. com. **catalyst**, are **tested** for 200-300 h under the above conditions using a vacuum gas oil as the feed. The yields and the compns. of **catalyzates** are then **compared**.

L22 ANSWER 210 OF 281 CA COPYRIGHT 2005 ACS on STN

AN 95:102275 CA

TI Model apparatus for **testing catalysts** for reducing nitrous gases

AU Mirzarakhimov, M. S.; Arifov, Zh. A.; Musaev, M. N.; Alidzhanov, T. A.

CS USSR

SO Deposited Doc. (1980), VINITI 1064-80, 10 pp. Avail.: VINITI

LA Russian

AB Waste gases from the manuf. of dil. HNO<sub>3</sub> were rendered harmless by the **catalytic** redn. of NO<sub>x</sub> to N with NH<sub>3</sub>, and an app. was developed to det. the activity of various **catalysts**. The optimum redn. temp. was 260°; the optimum NH<sub>3</sub> **flow** rate was 0.04 m<sup>3</sup>/h. The app. makes it possible to compare the activity of an exptl. **catalyst** with that of an industrial std. **catalyst** in **2 reactors** simultaneously operating under identical conditions.

L22 ANSWER 244 OF 281 CA COPYRIGHT 2005 ACS on STN

AN 77:144315 CA

TI Automated reactor system for **catalyst** research

AU Hogan, R. J.; Doane, E. P.

CS Res. Dev. Dep., Phillips Pet. Co., Bartlesville, OK, USA

SO Preprints - American Chemical Society, Division of Petroleum Chemistry (1971), 16(2), D35-D42

AB A fully automatic microreactor unit for **catalytic** studies is described. The system provides the means for obtaining data on **catalytic** reactions quickly, accurately, and with a min. amt. of attention. It can be adapted easily to a variety of expts., including reaction kinetics, **catalyst screening**, and **process variable studies**. The unit employs a central master programmer to conduct unattended expts. with **6 reactors**, and a high speed analyzer-integrator system to collect and analyze samples on command, and record the results on paper tape.

L22 ANSWER 281 OF 281 CA COPYRIGHT 2005 ACS on STN

AN 54:58703 CA

OREF 54:11399e-i,11400a

TI Macrokinetics of **catalytic** synthesis of ammonia at high pressures in continuous **flow** systems

AU Rusov, M. T.; Samarin, B. P.; Sidorov, I. P.; Strel'tsov, O. A.; Kurkchi, G. A.; Tretyak, V. G.; Koryakina, E. V.

SO Trudy Gosudarst. Nauch.-Issledovatel. i Proekt. Inst. Azot. Prom. (1957), (No. 7), 101-20

LA Unavailable

AB In synthesis of NH<sub>3</sub> the accumulation of reaction products lowers the rate of the **catalytic** reaction, i.e. the diffusion processes interfere

with the kinetic processes. Since both are interrelated the theoretical calcns. become very involved and practically useless. The study was undertaken to investigate the effect of the diffusion processes on the process of  $\text{NH}_3$  synthesis with the change in concn. of the reaction components and to det. the optimal conditions for reactor design. A N-H mixt. in stoichiometric proportions was purified, dried, and fed under pressure into a specially designed reactor. The **reactor** consisted of 7 columns joined in series by cross-channels located alternately at the top or the bottom of the column. The central column was used for the entry and preheat of the gas; the 6 peripheral columns were filled with the **catalyst**. In 2 series of expts. a tech. Fe **catalyst** of 2 ranges of particle size was used: 3.0-3.4 and 0.5-1.0 mm. The temp. interval 325-500°; vol. velocity at the exit 9000, 15,000, 24,000 l./hr./l. of the **catalyst**; pressures: 100, 200, and 300 kg./sq. cm. Above 400° the conversion rate depends largely on the particle size of the **catalyst**. The efficiency of **catalysts** of smaller particle size is higher at all concns. of  $\text{NH}_3$  in the gas along the whole length of the **catalyst**. The difference in efficiency increased with increase in vol. velocity of the gas. In the first 2 layers of the **catalyst** the efficiency of the smaller particle size was twice as high. With increase in  $\text{NH}_3$  concn. along the **catalyst** layer the **comparative** effectiveness at a given temp. dropped to 5-10%. Calcn. of the reaction rates vs.  $\text{NH}_3$  concn. as percentage of equil. showed that at low temps. the difference is small for the **catalysts** of different particle size. At higher temps. the difference is considerable, and it is very pronounced at temps. higher than 400°. The retarding action of diffusional processes is greatest at the lower layers of the **catalyst** when the  $\text{NH}_3$  concn. is small; their neg. effect diminishes when the concn. of  $\text{NH}_3$  approximates equil. conditions. The macrokinetic relations along the length of the **catalyst** column point to the fact that it is possible to increase its efficiency by using a **catalyst** of different particle sizes, from 2 mm. at the entry to 6 mm. at the exit.

=> log y

STN INTERNATIONAL LOGOFF AT 09:53:37 ON 07 DEC 2005

=> d his

(FILE 'HOME' ENTERED AT 14:04:23 ON 07 DEC 2005)  
FILE 'CA' ENTERED AT 14:04:29 ON 07 DEC 2005

E HOGAN R/AU  
L1 55 S E3,E9-10,E35-36  
L2 4 S L1 AND (REACTOR OR MICROREACTOR)  
E DOANE E/AU  
L3 24 S E4,E7  
L4 5 S L3 AND (REACTOR OR MICROREACTOR)  
L5 8 S L2,L4

=> d bib,ab 15 1-8

L5 ANSWER 4 OF 8 CA COPYRIGHT 2005 ACS on STN  
AN 100:123636 CA  
TI An integrated testing facility for bench scale catalyst research  
AU Johnston, H. D.; **Hogan, R. J.**; McMurtrie, D. E.  
CS Res. Dev. Dep., Phillips Pet. Co., Bartlesville, OK, 74004, USA  
SO Preprints - American Chemical Society, Division of Petroleum Chemistry  
(1983), 28(4), 960-72  
AB This paper describes an automated system that allows for £21 **reactors** to  
be in operation concurrently with a staff of 5 people. All units are  
independently run without normal operator intervention and the system is  
designed fail safe for unattended operation. It has been used  
extensively for screening exploratory catalysts, catalytic process  
optimization, kinetics modeling and, increasingly, in refinery process  
optimization.

=> log y

STN INTERNATIONAL LOGOFF AT 14:07:59 ON 07 DEC 2005